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Chronic low back pain: pain intensity, disability and quality of life

Dor lombar crônica: intensidade de dor, incapacidade e qualidade de vida

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Low back pain; Pain measurement; Nursing assessment; Advanced practice nursing; Nursing evaluation research

Descritores
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Abstract

Objective: To assess perceived pain, disability and quality of life in individuals with chronic low back pain.
Methods: Cross-sectional study. An 11-point numerical scale was used to measure pain intensity, the Roland-Morris questionnaire for disability and the WHOQOL-Bref to measure quality of life. Exploratory analysis and Spearman's correlation coefficient were applied and linear regression models were adjusted.
Results: In the sample of 97 participants, the mean disability score was 14.4; mean pain intensity score at the moment of the interview 5.4; and mean quality of life score 48.1 points. The physical quality of life domain was the most impaired, with a score of 44.1 points.
Conclusion: The perceived pain intensity was considered high, the disability level found was considered severe and the physical quality of life domain appeared as the most impaired and strongly associated with the disability level.

Resumo

Objetivo: Avaliar a percepção da dor, a incapacidade e qualidade de vida em indivíduos com dor lombar crônica.
Métodos: Estudo transversal. Utilizou-se uma escala numérica de 11 pontos para mensurar a intensidade de dor, o questionário de Roland-Morris para incapacidade e WHOQOL-Bref para mensurar a qualidade de vida. Realizou-se análise exploratória, coeficiente de correlação de Spearman e ajustados modelos de regressão linear.
Resultados: Amostra de 97 participantes, sendo que a média da incapacidade foi 14,4; da intensidade de dor no momento da entrevista, 5,4; e da qualidade de vida 48,1 pontos. O domínio físico da qualidade de vida foi o mais prejudicado, com 44,1 pontos.
Conclusão: A dor percebida foi considerada de alta intensidade, o nível de incapacidade encontrado foi considerado grave e o domínio físico da qualidade de vida o mais prejudicado e fortemente associado ao nível de incapacidade.

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Introduction

Chronic pain can reduce people's quality of life (QoL) due to suffering, failed treatments, medication dependence, social isolation, difficulties at work and emotional distress. In addition, it limits professional and leisure activities and decreases patients' functional ability. It can also cause irritation, sleep disorders, reduced appetite and severe physiological, psychological and social consequences.[1,2]

Chronic low back pain is a highly prevalent and costly musculoskeletal problem in economically advanced societies nowadays. It can cause long-term disability, absenteeism from work and frequent health service use.[3-5]

Therefore, low back pain is considered a public health problem of clinical, social and economic importance, which affects the population without distinctions[6] and requires effective management. Adequate management of pain experiences is only possible if this subjective phenomenon and directly related factors are assessed and measured.

Pain measurement and assessment represent a great challenge to people aiming for appropriate control. Pain is considered a complex, multidimensional, individual and subjective perceptive experience that can only be quantified indirectly.[7] Patients' pain complaints should be valued, offering humanized care. Pain should be assessed together with the measurement of vital signs so as to relieve these patients' suffering and guarantee their rights.[8]

In this context, the assessment of pain intensity, quality of life and any physical disability pain brings about permits further knowledge on chronic low back pain patients. Hence, measuring these variables can contribute to direct treatment, through the monitoring of pain conditions and the assessment of care outcomes. Therefore, the aim in this research was to assess perceived pain in chronic low back pain patients and compare it with quality of life and physical disability levels.

Methods

A cross-sectional study was developed. A convenience sample of chronic low back pain patients was constituted. Data were collected between February 2010 and August 2011, at a pain clinic in a city in São Paulo State, where care is delivered through the public health system (SUS), health insurances and privately. The inclusion criteria were: medical diagnosis of specific or non-specific Chronic Low Back Pain and individuals over 18 years of age. The exclusion criteria were: cancer-related pain and difficulties to understand the requested tasks.

A numerical 11-point scale was used to collect data on pain intensity; the category estimation method was applied. The numerical scale is an ordinal scale ranging from zero to ten points, in which "zero" means absence of pain and "ten" means unbearable pain. Intermediary pain scores are used to indicate intermediary pain intensities. The participants scored perceived pain at the moment of the interview, the strongest perceived pain intensity in the last week and the weakest perceived pain intensity in the last week.

The Roland-Morris questionnaire is a specific instrument, used for disability assessment in low back pain patients, and has been adapted and validated for the Brazilian culture. This questionnaire consists of 24 items related to activities of daily living. Its score is calculated by adding up all questions marked, ranging between zero and 24, in which zero corresponds to the absence of disability and 24 to severe disability.[9]

For quality of life assessment purposes, the short version of the WHOQOL-100 was used, an instrument constructed by the World Health Organization and validated for Portuguese – the WHOQOL-bref. This tool consists of 26 questions and covers one general and four specific domains (physical, psychological, social relations and environment).[10] Quality of life scores in the WHOQOL-bref domains range between zero and 100. The higher the score in each domain, the better the quality of life will be.

For data analysis, descriptive statistics were used, starting with exploratory data analysis. Spearman's correlation coefficient was applied to establish the correlation between the variables of interest. Linear regression models were adjusted, using PROC REG in the software SAS 9.1 to calculate the association

among pain intensity, quality of life and disability. For each response variable, simple models (only one independent variable) were adjusted, resulting in an R^2 index. Then, multiple models were adjusted, containing more than one independent variable, resulting in adjusted R^2 indices. The control variables used were age, gender, BMI, time of diagnosis, education, income and smoking. For statistical data analysis, the software SAS version 9.1 was applied.

In the development of this study, Brazilian and international standards for research involving human beings were complied with.

Results

The convenience sample consisted of 97 individuals. The sample number for family income is lower as some participants refused to answer that question. Predominant characteristics were as follows: female gender (69.0%) and mean age of 54.2 years; 38.1% of the sample were people aged 60 years or older. As regards the education level, 41.24% of the sample indicated up to eight years education. Concerning family income, the study revealed that 70.53% received between two and eight monthly minimum wages. As for BMI, 73.20% suffered from overweight or obesity, 32.98% of whom revealed some degree of obesity in accordance with the WHO (World Health Organization) classification.(11) Approximately 80% of the sample were non-smokers and the mean time of diagnosis of the chronic low back pain was 77.4 months (Table 1).

The mean score on the Roland-Morris disability questionnaire was 14.4 points, with 58.76% of the sample scoring higher than 14 points. As regards perceived pain, the mean strongest pain score in the last week was eight points, with 73.19% of the sample scoring higher than eight. The mean lowest pain score in the last week was 4.2 points and the mean pain score at the moment of the interview 5.4 points. The general mean QoL score was 48.1 points, in which the physical domain appeared as the most impaired, with 44.1 points (Table 2).

Table 1. Sociodemographic data

Variáveis	n(%)
Gender	
Female	67(69.07)
Male	30(30.93)
Age	
20 to 29 years	4(4.12)
30 to 39 years	11(11.34)
40 to 49 years	26(26.80)
50 to 59 years	19(19.58)
> 60 years	37(38.14)
Mean (SD) min-max	54.2(14.5) 22-84
Education	
None	2(2.06)
Up to 8 years	40(41.24)
9 to 12 years	32(32.99)
More than 12 years	23(23.71)
Familiy income	
Up to 2 MW	11(11.58)
2 to 8 MW	67(70.53)
More than 8 MW	17(17.89)
Body Mass Index	
<18.5	1(1.03)
18.5 to 24.9	25(25.77)
25 a 29.9	39(40.20)
>30	32(32.98)
Smoking	
Yes	19(19.59)
No	78(80.41)
Time of diagnosis	
Mean (SD)	77,4(85.10)

Legend: Gender n=97; Age n=97; Education n=97; Family Income n=95; Body mass index n=97; Smoking n=97; Time of diagnosis n=97

Associations between the three moments of pain intensity and disability revealed weak to moderate positive correlations (strongest pain r=.22 p=.03, weakest pain r=.45 p<.01, pain at the moment of the interview r=.35; p<.01). Regression analysis showed that stronger pain intensity, in combination with the control variables, explains 19% of variability in disability levels. Only pain intensity is responsible for 4% of this relation, as a strong interaction factor with the control variables. Among these, gender (coefficient=4.5 and p=.00) is the variable that most strongly influences this relation,

demonstrating higher disability scores among men than women.

Table 2. Pain intensity, disability level and quality of life domains

Variable	Mean	Median	Standard Deviation	Min.	Max.
Pain intensity					
Stronger pain in last week	8.0	8.0	2.3	0.0	10.0
Weaker pain in last week	4.2	4.0	2.5	0.0	10.0
Pain at the moment of the interview	5.4	6.0	2.9	0.0	10.0
Disability	14.4	16.0	6.0	1.0	24.0
Quality of life					
Physical domain	44.1	46.4	21.0	3.6	96.4
Psychological domain	61.4	62.5	18.0	20.8	100.0
Social relations domain	65.6	66.7	18.7	16.7	100.0
Environment domain	62.0	62.5	15.5	28.1	100.0
General domain	48.1	50.0	24.2	0.0	100.0

Associations between the three moments of pain intensity and QoL showed weak negative correlations with the physical domain of quality of life (strongest pain r=-.29 p<.01, weakest pain r=-.38 p<.01, pain at the moment of the interview r=-.28; p<.01). Regression analysis revealed that greater pain intensity, in combination with control variables, explains 15% of variability in the physical domain. Only pain intensity is responsible for 8% of this relation, as an interaction factor with the control variables. Among these, gender (coefficient=-11.26 and p=.02) appears as the variable that most strongly influences this relation, demonstrating that women score higher in the physical domain than men. The associations with other QoL domains showed no evidence of any relation with pain intensity.

Associations between disability and QoL domains revealed a strong negative correlation with the physical domain (r= -.77, p<.01) and a moderate negative correlation with the psychological domain (r= -.45, p<.01). Regression analysis revealed that disability combined with the control variables, explains 65% of variability in the physical QoL domain. Only disability is responsible for 61% of this relation, showing a low interaction factor with the control variables, among which age (p=.01) appears as the variable that most strongly influences this relation. Thus, the physical QoL domain reveals to be the most strongly related with disability levels when compared to other domains. Complete data are displayed in table 3. Associations between disability and other QoL domains provide limited evidence.

Discussion

Study limitations include the lack of non-probabilistic sampling and of a control group for comparison. In this study, the perceived pain of chronic low back pain patients was assessed and compared with quality of life and physical disability levels. This permits knowledge on the relations between the attributes under analysis, highlighting how important it is for nurses to appropriately assess patients in pain and to take into account all attributes related to this phenomenon.

The mean disability level observed in this sample with the help of the Roland-Morris questionnaire was 14.4 points, which represents severe disability[12], in accordance with a research developed in the USA;[13] in other studies, moderate disability levels were found.[14-16] In a study undertaken in Slovenia, approximately 50% of the chronic low back pain sample presents moderate to severe disability.[17] The degree of disability found in this study is underlined, showing the extent to which chronic low back pain patients cannot perform daily activities normally.

The higher pain measured in the last week revealed a mean score of 8.0 points. In another study, it was observed that, when asked about this parameter, 42% of the interviewees demonstrated strong low back pain in the last week, scored between seven and ten, on a scale from zero to ten.[18] The weakness of categorical pain measurement scales is highlighted; first, because the number of categories through which the

Table 3. Disability x quality of life domains

Domains	Parameter	Coefficients	p-value	R2	Adjusted R2
Physical	Intercept	79.58	<0.01		
	Disability	-2.81	< 0.01	0.61	0.65
	Gender	1.28	0.68		
	Age	0.28	0.01		
	BMI	-0.21	0.37		
	Education	3.60	0.06		
	Income	-4.00	0.16		
	Smoking	-5.63	0.10		
	Time of diagnosis	-0.02	0.16		
Psychological	Intercept	50.94	< 0.01		
	Disability	-1.54	< 0.01	0.22	0.22
	Gender	5.12	0.20		
	Age	0.30	0.02		
	BMI	0.31	0.29		
	Education	1.89	0.43		
	Income	0.46	0.90		
	Smoking	5.70	0.19		
	Time of diagnosis	0.01	0.67		
Social relations	Intercept	33.00	0.06		
	Disability	-0.51	0.16	0.01	0.02
	Gender	5.27	0.26		
	Age	0.34	0.02		
	BMI	0.44	0.21		
	Education	0.84	0.76		
	Income	3.31	0.44		
	Smoking	1.08	0.83		
	Time of diagnosis	-0.02	0.55		
Environment	Intercept	50.65	<0.01	0.08	0.08
	Disability	-0.81	<0.01		
	Gender	0.39	0.92		
	Age	0.27	0.02		
	BMI	0.26	0.34		
	Education	1.30	0.57		
	Income	-0.99	0.77		
	Smoking	4.49	0.27		
	Time of diagnosis	-0.01	0.68		

stimuli are judged is fixed; second, because the method introduces severe bias when considering the range of the categories and the constraint caused to the interviewee by imposing an anchor (upper limit) at the end of the pain continuum.[7] Therefore, the need for further research is emphasized to understand the quality of perceived pain through characteristic descriptors.

The most affected QoL domain found in this study was the physical, in accordance with other studies.[13,14,19,20] The physical QoL domain comprises questions related to pain, discomfort, energy, fatigue, sleep and rest, revealing the extent to which these factors are negatively influenced in chronic low back pain patients.

In this study, a weak association was found between pain intensity and disability and QoL, indicating that pain intensity is weakly related to the degree of disability and QoL. This relation needs to be better understood in future research, with a view to furthering knowledge about what factors are more strongly associated with disability. Also, other related attributes need to be investigated, including self-efficacy beliefs, catastrophizing and depression. This understanding permits knowledge about the phenomena involved in the chronic pain phenomenon, so as to guide its management.

A strong association was observed between disability and the physical domain of QoL, in accordance with studies in Slovenia[17] and the Netherlands.[20] In a study undertaken in Sweden, on the other hand, a moderate association between these variables was found.[14] Thus, the physical domain of QoL seems to be the most strongly related with the disability level, indicating that high levels of disability could bring about a worse QoL.

Chronic back pain can cause greater disability and a worse quality of life, especially in patients with somatic-mental comorbidities, in female patients and in patients with high levels of chronic pain. Health professionals need to focus on an active search for depression and anxiety signs and for better pain management in chronic low back pain patients, particularly in case of somatic comorbidities. This can lead to an important reduction in disability levels and improve quality of life, as expected for the appropriate management of these patients.[17]

Conclusion

High pain intensity, severe disability and great impairment in the physical domain of quality of life were perceived. A strong association was observed between disability and the physical quality of life domain, indicating that disability negatively affects and strongly influences physical quality of life in these patients with chronic low back pain.

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Collaboration

Stefane T; Santos AM; Marinovic A and Hortense P declare that they contributed to the conception and project, data analysis and interpretation; writing of the paper, relevant critical review of the intellectual contents and final approval of the published version.

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